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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/522,965

07/29/2005

Mircea Gradu

TIMK 8443W1

6919

1688 7590 05/30/2007  
POLSTER, LIEDER, WOODRUFF & LUCCHESI  
12412 POWERSCOURT DRIVE SUITE 200  
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EXAMINER

LE, DAVID D

ART UNIT

PAPER NUMBER

3681

MAIL DATE

DELIVERY MODE

05/30/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/522,965	GRADU, MIRCEA	
	<b>Examiner</b>	<b>Art Unit</b>	
	David D. Le	3681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>04/28/05</u> | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This is the first Office action on the merits of Application No. 10/522,965, filed on 29 July 2005. Claims 1-16 are pending.

### **Documents**

2. The following documents have been received and filed as part of the patent application:
  - Information Disclosure Statement, received on 01/31/05
  - Declaration and Power of Attorney, received on 07/29/05

### ***Drawings***

3. The drawing of Fig. 2 is objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "30" has been used to designate both the vehicle and the chain. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Specification*

4. The disclosure is objected to because of the following informalities:

- Page 6, line 2, “wheels 2” should be --wheel 12--;
- Page 6, lines 19-30, the reference character “30” has been used to designate both the vehicle and the chain;
- Page 7, line 25, “convert 100” should be --coupling 100--;
- Page 8, line 13, “the clutch 108” should be --the clutch 110--; and
- Page 9, line 10, “clutch 38” should be --clutch 110--.

Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 2-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 2-11:

- Claims 2-11 recite, in part, the limitation "The combination" in. There is insufficient antecedent basis for this limitation in the claim.

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Claim 3:

- Line 4 recites, in part, the limitation “a piston pump”. It is unclear whether this newly recited “a piston pump” is different from the one, which is first recited on line 2 of the claim.
- Claim 4, line 7 recites the limitation "said planetary elements" in. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1-5 and 9-16 are rejected under 35 U.S.C. 102(b) as being anticipated by U.**

**S. Patent No. 5,083,986 to Teraoka et al.**

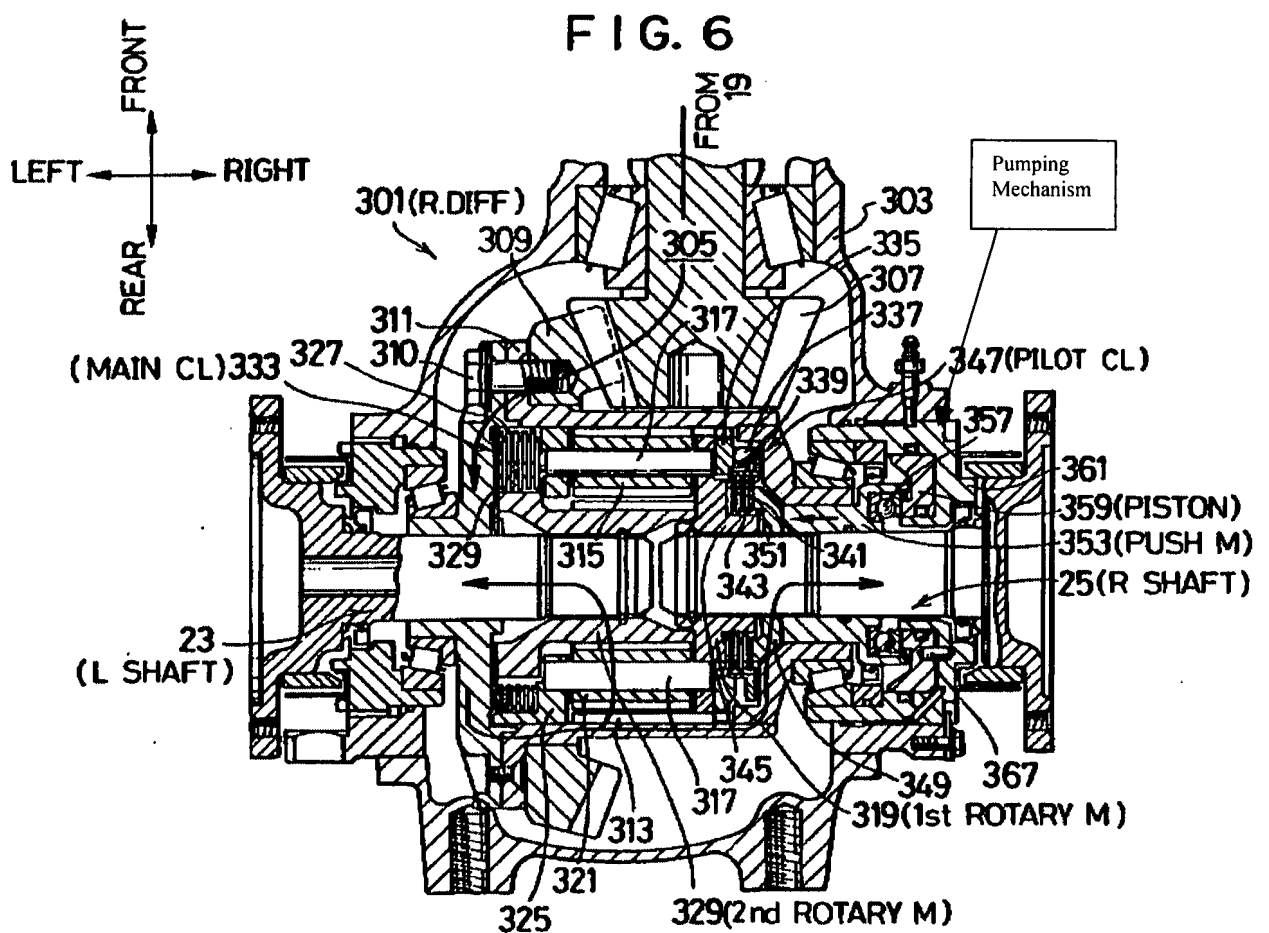
Claims 1-5 and 9-16:

***Teraoka*** (i.e., Figs.2 and 6; column 5, line 54 – column 14, line 9) discloses a differential assembly comprising:

- An input shaft (i.e., Fig. 6, element 311) adapted to be connected to a source of torque (i.e., Fig. 2, element 1 and 3);
- An output shaft (i.e., Fig. 6, element 25) from which torque is delivered, the input shaft (311) and the output shaft (25) having a common axis of rotation (i.e., Fig. 6);

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- A clutch (i.e., Fig. 6, element 333) having a first clutch member (i.e., Fig. 6, being the outer friction plates 327) and a second clutch member (i.e., Fig. 6, being the inner friction plates 327) capable of rotating at different angular velocities, the clutch (333) configured for transferring torque between the first and second clutch members when the first and second clutch members rotate at different angular velocities, the first and second clutch member being operatively connected to the input shaft (311);



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- A pumping mechanism (i.e. Fig. 6; element Pumping Mechanism above) configured to engage the first and second clutch members of the clutch (333) when the first and second clutch members rotate at different angular velocities;
- A planetary set (i.e., Fig. 6, element 301) including a first element (i.e., Fig. 6, element 313), a second element (i.e., Fig. 6, element 329), a third element (i.e., Fig. 6, element 319), and a fourth element (i.e., Fig. 6, being the combination of elements 315 and 321) organized about the common axis of rotation, the first element (313) operatively connected to the first clutch member and to the input shaft, the second element (329) connected to the second clutch member, the third element (319) connected to the output shaft (25), and the fourth element operatively connected between the first element and the second element, and between the second element and the third element;
- Wherein the input shaft (311), the clutch (333), the second element, the third element, the fourth element, and the output shaft define a first torque path;
- Wherein the input shaft (311), the first element (313), the third element, the fourth element, and the output shaft define a second torque path;
- Wherein the pumping mechanism includes an external gear (i.e., Fig. 6, element 335) operatively coupled to the second clutch member, an internal gear (i.e., Fig. 6, being the right portion of element 313 that engages with element 335) coupled to the input shaft, an axial cam plate (i.e., Fig. 6, element 353), and a piston (i.e., Fig. 6, element 359);
- Wherein the first element is a ring element located around the common axis;

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- Wherein the second element is a sun element which rotates about the common axis (i.e., Fig. 6);
- Wherein the third element is a carrier element which rotates about the common axis (i.e., Fig. 6);
- Wherein the fourth element is a planetary element located between, and engaged with the sun and the ring elements, the planetary element disposed on the carrier element (i.e., Fig. 6);
- A locking mechanism (i.e., Fig. 6, element 347) configured to maximize torque transfer between the input shaft and the output shaft;
- Wherein the locking mechanism (347) is disposed in parallel with the clutch (333) between the first and second elements of the planetary set;
- Wherein the locking mechanism (347) is disposed between the first and third elements of planetary set;
- Wherein the locking mechanism (347) is disposed between the second and third elements of the planetary set;
- Wherein the locking mechanism (347) is configured to operatively lock the first element and the second element about the common axis of rotation;
- Wherein the locking mechanism (347) is configured to operatively lock the second element and the third element about the common axis of rotation; and
- Wherein the locking mechanism (347) is configured to operatively lock the second element and the third element about the common axis of rotation.



***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teraoka et al. in view of U.S. Patent No. 4,185,723 to Kelbel.**

*Claims 6-8:*

*Teraoka* discloses the limitations as set forth in paragraph 8 above. Regarding claims 6-8, *Teraoka* lacks:

- Wherein the locking mechanism consists of a roller controlled bi-directional clutch, a sprag controlled bi-directional clutch, or a strut controlled bi-directional clutch.
- *Kelbel* (i.e., Figs. 3-6; column 3, line 18 – column 6, line 54), on the other hand, teaches a transfer mechanism comprising a locking mechanism consisting of a roller controlled bi-directional clutch (i.e., Fig. 3, element 72). It is also well known that the roller controlled bi-directional clutch, the sprag controlled bi-directional clutch, and the strut controlled bi-directional clutch can be used interchangeably.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Teraoka, such that the locking mechanism 347 is a roller controlled bi-directional clutch, in view of Kelbel, in order to provide a differential assembly that is structurally simple and more economical to manufacture (i.e., Kelbel, column 2, lines 38-41).

### ***Double Patenting***

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting

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ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1, 4, 12 and 16 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 4 of U.S. Patent No. 6,755,762 (US'762) in view of U. S. Patent No. 5,083,986 to Teraoka et al.

Claim 4 of US'762 claims a vehicle having a torque coupling comprising an input shaft, an output shaft, a clutch, and a planetary set, as recited in claims 1, 4, 12 and 16 of the instant application. Claim 4 of US'762 lacks a pumping mechanism and a locking mechanism.

Teraoka teaches the pumping mechanism and the locking mechanism as set forth in paragraph 8 above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify US'762 to include the pumping mechanism and the locking mechanism, in view of Teraoka, order to effectively transfer torque from the input shaft to the output shaft of the claimed torque coupling.

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13. Claims 1, 4, 12 and 16 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 6-8 of U.S. Patent No. 6,712,730 (US'730) in view of U. S. Patent No. 5,083,986 to Teraoka et al.

Claims 6-8 of US'730 claims a torque coupling comprising an input shaft, an output shaft, a clutch, and a planetary set, as recited in claims 1, 4, 12 and 16 of the instant application. Claims 6-8 of US'730 lacks a pumping mechanism and a locking mechanism.

Teraoka teaches the pumping mechanism and the locking mechanism as set forth in paragraph 8 above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify US'730 to include the pumping mechanism and the locking mechanism, in view of Teraoka, order to effectively transfer torque from the input shaft to the output shaft of the claimed torque coupling.

14. Claims 1, 4, 12 and 16 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 8 and 15 of U.S. Patent No. 6,645,108 (US'108) in view of U. S. Patent No. 5,083,986 to Teraoka et al.

Claims 8 and 15 of US'108 claims a vehicle having a torque coupling comprising an input shaft, an output shaft, a clutch, and a planetary set, as recited in claims 1, 4, 12 and 16 of the instant application. Claims 8 and 15 of US'108 lacks a pumping mechanism and a locking mechanism.

Teraoka teaches the pumping mechanism and the locking mechanism as set forth in paragraph 8 above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify US'108 to include the pumping mechanism and the locking mechanism, in view of Teraoka, order to effectively transfer torque from the input shaft to the output shaft of the claimed torque coupling.

15. Claims 1, 4, 12 and 16 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3, 6, 7, 11 and 19 of U.S. Patent No. 6,712,728 (US'728) in view of U. S. Patent No. 5,083,986 to Teraoka et al.

Claims 3, 6, 7, 11 and 19 of US'728 claims a transfer case comprising an input shaft, an output shaft, a clutch, and a planetary set, as recited in claims 1, 4, 12 and 16 of the instant application. Claims 3, 6, 7, 11 and 19 of US'728 lacks a pumping mechanism and a locking mechanism.

Teraoka teaches the pumping mechanism and the locking mechanism as set forth in paragraph 8 above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify US'728 to include the pumping mechanism and the locking mechanism, in view of Teraoka, order to effectively transfer torque from the input shaft to the output shaft of the claimed torque coupling.

***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

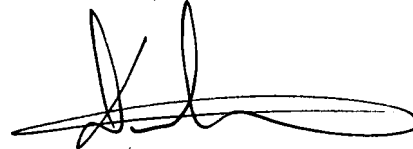
- Kawahara et al. (U. S. Patent No. 5,890,983) teaches a power transmission apparatus, as shown in Fig. 1.
- Kerr (U. S. Patent No. 6,409,001) teaches a multi-directional coupling, as shown in Figs.1a-2c.
- Showalter (U. S. Patent No. 5,992,592) teaches a bi-directional overrunning clutch assembly, as shown in Fig.2.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Le whose telephone number is 571-272-7092. The examiner can normally be reached on Mon-Fri (0700-1530).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles A. Marmor can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'David D. Le', with a long horizontal flourish extending to the right.

David D. Le  
Primary Examiner  
Art Unit 3681  
05/21/2007

ddl